

CLAIMS

1. A method of producing a holey optical fiber preform, comprising:

5       forming a porous preform (121) having a longitudinal direction (113); and

          forming at least one hole (349) extending through the porous preform along the longitudinal direction, wherein said at least one hole is formed by drilling  
10       (305) the porous preform.

2. The method according to claim 1, in which the density of the porous preform in a region thereof wherein the at least one hole is to be formed has a maximum  
15       variation of  $\pm 2\%$ .

3. The method according to claim 1, further comprising submitting the porous preform to a consolidation process after said drilling.  
20

4. The method according to claim 3, further comprising submitting the porous preform to a dehydration process after said drilling.

25       5. The method according to claim 1, in which said porous preform is a soot preform formed by means of flame hydrolysis, particularly a glass soot preform.

30       6. The method according to claim 1, in which said glass soot preform is formed by means of an Outside Vapor

Deposition (OVD) process or a Vapor Axial Deposition (VAD) process.

7. The method according to claim 1, in which said  
5 glass soot preform has a density (D) in a range from 0.25 to 0.8 g/cm<sup>3</sup>.

8. The method according to claim 7, in which the  
density of the glass soot preform is in a range from 0.5  
10 to 0.7 g/cm<sup>3</sup>.

9. The method according to claim 1, in which the  
porous preform is a gel preform.

15 10. A method of producing a holey optical fiber having at least one hole extending through a fiber longitudinal direction, comprising:

forming a holey optical fiber preform by means of  
the method according to any one of the preceding claims,  
20 and

drawing the holey optical fiber preform.

11. A device (301) for drilling holes (339) in a  
porous preform (121), comprising:

25 a porous preform supporting structure (303), comprising an arrangement of porous preform holders (329a,329b) adapted to engage an outer surface of the porous preform for keeping the porous preform steady, and  
a drill (305) for actuating at least one drilling  
30 bit (341), and

a position adjustment structure (309,319,313,317,325,321,327) for adjusting a relative position of the porous preform and the drill.

5 12. The device according to claim 11, in which the porous preform holders have an active surface intended for contacting the porous preform, said active surface being made of an elastomeric material, particularly rubber, even more particularly silicon rubber.

10

13. The device according to claim 11, comprising a tilt mechanism (315a,351b,357a,357b) adapted to tilting an axis of the porous preform supporting structure with respect to a reference plane (355).

15

14. The device according to claim 11, further comprising at least one drilling mask (347), having formed therein a respective predefined pattern of holes, said mask being associatable with the porous preform for  
20 guiding the drilling of holes.